



NO. 3.—SUSSEX-STREET AND DARLING HARBOUR. A RAMBLE DOWN SUSSEX-STREET will give the wayfarer a better idea, not only of the productive power of New South Wales, but also of her latent or at all events only partially developed manufacturing power, than will a visit to any other quarter of the city. On the numerous wharves that border Darling Harbour in close proximity to this street are landed the articles of produce that come coastwise, from the North and from the South, whilst the greater part of the street itself, together with the numerous off-shoots from it towards the water, are lined with the offices and stores of produce-agents and dealers of every kind and degree.

There you will see stores, bursting with heaps of golden grain, from the deep-coloured maize to the less obtrusive wheat; potatoes are piled up bag upon bag; hay bound and pressed fills out-houses until there is no longer room for storage, and the bales in full exposed, or covered with tarpaulin, a temptation that the numerous goats which infest this quarter find it impossible to resist; poultry of all kinds shriek, or cackle, or gabble, according to their several characters, as though protesting against the crowded nature of the coops in which they are confined. Or, what is of still greater importance, you can find no part of this in which the snort of the steam-engine is not heard, or in which the ring of the hammer upon iron does not wound the air. And further than this again, here is the place where coal merchants most do congregate, and the black diamonds of Australia fairly number the wharves, particularly towards the head or south of the harbour.

Before going into particulars, however, it would be as well were we to take a general view of the eastern quarter of Darling Harbour, and having done this, we shall take our readers along Sussex-street, and amongst the many odd out of the way places that lie between that street and the water's edge. Looking along the eastern margin of the bay or indentation the head of which may, perhaps, be more familiar to the Sydney cockney of ancient date, under the name of Cockle Bay, we see that wharves, jetties, piers, and embankments, have within the last few years been gradually pushed out from the shore into the waters of the harbour, until now they have very materially infringed upon them, particularly towards their southern extremity. Whilst this encroachment has been going on in this direction, the water area has been still further decreased by the gradual silting up of the head of the bay. This silting up has gone on so rapidly that an acre of something like fifty acres has been reclaimed by this natural process within the last twenty years; and that is now permanently dry land, upon which cattle browse peacefully, that within the memory of most of us was covered by the flood tide. When the mills at the end of Sussex-street, to the south of its junction with Hay-street, and known, we believe, as Smart's Mills, were first erected, the tide flowed up to its outer wall in sufficient quantity to float a good sized boat; now, a very comfortable and well-cared for garden has been laid out on the spot. In fact the marks of the gradually decreasing tidal waters have been carefully noted at different periods, and there are reasons for fearing that before many years are past the whole of the head of Darling Harbour, as far as the Pyrmont Bridge, will be filled up in the same manner. At the present time the low water mark barely touches the line of Liverpool-street, and the high water mark only just passes the line of Goulburn street.

The cause of this silting up has been said to be, not so much the debris washed down into the head of the bay as the decreased tidal force consequent upon the many extensive encroachments upon the waters of the harbour, especially on the eastern side, round which the outgoing tide was once accustomed to set, and carry off every particle brought to it either by flood or sewer. The wharves and jetties that have been erected have checked the tidal outflow to such an extent as to seriously diminish, if not to render altogether nugatory, its scouring power, and that every particle of earthy or other matter brought down by drains or sewers is left unremoved. To this is added the foreign substances taken up by the water themselves in their wash upon the shore, caused by the violence of winds or the action of steam-boats, all of which substances are sure to be deposited at that spot where the tidal force is smallest, namely, at the extreme point reached by the incoming tide.

In so far as it has yet gone, this silting up of the head of the bay has caused no great inconvenience, except perhaps to some few persons who formerly owned water frontages, that are no longer; but, if it be allowed to continue unchecked, serious consequences are likely to ensue from the impediments that will be thrown in the way of the water traffic that supports so large a number of establishments in this quarter of the city.

Several schemes have been proposed, having for their object, first, the reclamation of the head of Darling Harbour; and second, the preservation of existing water frontages. The head of the harbour is now, at low water, only a pestiferous mudbank. The ordinary effluvia given forth by a mudbank from which the sea water has retired is offensive enough in all conscience; but when this is increased, as is the case, at the head of this bay, by the silt brought down by the Hay-street sewer, the effluvia becomes not merely unbearable, but also noxious and destructive to health. The Engineer for Rivers and Harbours has recommended the construction of a substantial sea wall of a semicircular form, commencing at the eastern side, at a point between Goulburn and Liverpool streets, and carried round in a curve to the Pyrmont side to a point nearly opposite. The City Engineer, however, proposes a much more extended plan. He carries Bathurst-street straight across to Pyrmont, leaving a canal communicating with a dock 200 or 300 feet wide, extending from Bathurst to Liverpool street. The traffic of Bathurst-street would cross this canal by means of a swing bridge. To the north of the continuation of this street, he suggests a public wharf, carried by a curve to a little beyond the point where the present Darling Harbour extension of the rail way line ceases. The dock would secure the present water frontages of wharves between Bathurst and Liverpool streets, whilst by dredging, a depth of twenty feet of water could easily be secured all along the proposed line of wharf. One of the great causes of the silting up would thus be removed; the other, however, and the more serious one of the two, namely the checked tidal force, and consequently decreased scouring power would still remain, whichever plan was adopted.

So long as we have the present projections of piled piers and wharves into the waters of this harbour, so long shall we have the same tendency to silt up; the head of the indentation, whether that head be nearer or farther from the entrance of the bay. It is only by one continuous and unbroken line of sea wall that the full scouring force of the outgoing tide can be kept up, and this we are unfortunately not likely to obtain. So many and such great interests have grown up since the first enterprising water frontage builders drove their piles and formed their wharves upon the edge of the harbour, that no Government would be powerful enough to interfere with them. While our national purse is not likely for many years to come to be full enough to pay the large amount of compensation that would be required, even in the event of such interference being legalised.

In all great maritime cities, the tendency of late years has been towards constructing continuous lines of wharfage along the borders of the water, first, because the tidal force is now allowed to operate to its fullest extent; and next, because greater convenience and elegance are thus obtained. Unluckily, Sydney is in no position to avail itself of the experience of other and older cities than itself. Encroachments,—and when we use the term, we employ

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it solely in reference to the diminished water area, and not in its legal sense,—have been authorised year after year, by the Government after a longer, until now the line of wharfage is so broken, that anything like a continuous quay would be an impossibility, unless at an expense that the country could never bear. Beside, as we have said, large interests have grown up under this permissive system, for canaries, and even private individuals have gone to great expense in carrying out their extensions into the Bay; and their rights, having been acquired legally, cannot be ignored.

We are thus compelled to make the best of the matter as it stands, and the only way of doing this will be to get rid of as much of the nuisance as we can, and to form as much of a continuous line of sea wall as is in our power to do. The first thing to be considered is, doubtless, the abatement of the nuisance arising from the mud-bank at the head of the harbour, from which the poisonous exhalations perpetually threaten the city with an epidemic. We have only to stand upon any one of the jetties at half-ebb and to breathe through the nostrils, to be made aware of the disagreeable character of the substances that the outgoing tide is carrying on its surface. On its surface, because the sewage matter, being specifically lighter than water, floats on it, and may easily be perceived by the eye; rising in the shape of a thin unctuous scum rising in large patches on the face of the water. It is so easily perceptible here, both to the eye and the nostril, that what must it be when laid out on the surface of the oozy mud, exposed to the sun, that spring up to sicken, poison, or destroy all with whom it comes into contact?

By the plan originally laid down by the civic body, silt pits for the reception of the sewage matter, brought down by the Hay-street sewer are to be established somewhere on the line of sewer, and in close proximity to the railway line. In these pits the sewage is to be decanted, mixed with ashes, and sold as manure to market gardeners and others. If this is done fully and completely, so as to allow of nothing but flood water passing out from the sewer into the harbour, the greater part of the evil now complained of will be removed; and as the Government have shown themselves anxious to do something to remove the other part of the evil by reclaiming the head of the bay, and Parliament have already voted £10,000 towards this good work, we may hope soon to see this long threatening evil completely remedied. It threatens still, however, and to such an alarming extent, as to demand instant attention, and to require the putting aside of official delays and red tapeism for the adoption of prompt action.

### REVIEW.

FATHER MATHEW: A Biography. By Francis Maguire, M.P., author of "Home, its Rulers and its Institutions." Longman.

Father Mathew was descended from a noble Welsh family, the Earls of Llandaff; and the tombs of the Mathew family are in the cathedral of Llandaff, in Glamorganshire. He was born in 1790, and studied in Maynooth, where the apostle of temperance seems to have been, without stepping over the strictly moral line, rather a frothy character. Some years elapsed, however, before he entered upon the priesthood. In 1814 he attached himself to the Capuchin order, and was ordained by Dr. Murray. A somewhat humorous account is given of his first sermon.

His first sermon was delivered in the parish chapel of Kilkeel, in his native county of Tipperary. It was on the occasion of his saying Mass for the priest. He read and explained the Gospel of the day, which proclaim the startling announcement, that it is more difficult for a rich man to enter into the Kingdom of Heaven than for a camel to pass through the eye of a needle. His principal object in this his first sermon was a village named Lismilena, Mr. Scully—considered to be one of the richest in Tipperary. This rural creature was much struck with the discourse which was not a little enhanced by the wit and ready repartee of the apostle of temperance. Some years elapsed, however, before he entered upon the priesthood. In 1814 he attached himself to the Capuchin order, and was ordained by Dr. Murray. A somewhat humorous account is given of his first sermon.

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Father Mathew was unwillingly punctual in his attendance and ministrations in the hospitals. The nurses watched the patients, and he watched both patients and nurses; and in gardens and hospitals, as well as by the bedside of his friends, or those to whom he was more personally related, he went, intrepid and active in an extraordinary degree, and the following very singular incident, soon well known through the city, show the value of his vigilance and supervision:—

He had administered the last rites of religion to a young man who had a special inclination, but had not yet committed a sinner to another part of the hospital, he had rapidly quitted the ward, from which he was absent but for a short time. On his return, he approached the bed in which he had left the young man alive; but he was now unconscious. "What has become of the patient who left me this?" said Father Mathew. "Dead," said the nurse. "Was he a laudanum-sucker?" "Yes," said Father Mathew. "I feel very much obliged to you for trying to squeeze me through the eye of a needle." The old gentleman was at that time completely dead.

Father Mathew, "preach for the poor, and your preaching will always serve for the rich." A remarkable year in the life of the good man was 1852. It was the year of the cholera, and Father Mathew was unfailingly punctual in his attendance and ministrations in the hospitals.

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## A DAY ON A CORAL REEF.

(By M. F., in the *Christian Spectator*)

"GOING curio-hunting?" said the second mate to me, one hot February morning, as I stood by the gangway in my hunting costume, that is, in a suit of clothes much too far gone to suffer any more harm from sea-water, with a large picket-jar slung over my shoulder. Those most intelligent of earth's creatures, the mercantile marine, have invented the term "curio" for objects of natural history, believing that only a childish pretense of curiosity could lead men to gather such things. Yes, I was going curio-hunting, and with a naval officer as companion pushed off in the jolly-boat. After a short sail the keel grated on coral ground, and we jumped ashore.

Coral reefs differ in appearance and structure in different parts of the world. Ours was of this kind. Imagine an oblong island, as flat as a dining-table, some few acres in area, sunk about two feet under the level of low water, with a heap of stones and sand about the size of a couch towards the southern end, and a line of breakers washing the northern end. Such coral reef seemed to be as we first stepped on to it.

Pleasing our provisions on the dry stone-heap, we began to wade towards the breakers, where we knew the greatest abundance of animal life would be found. It was a splendid, calm, hot day, not a cloud in the sky, not a sound in the air, hardly a ripple on the sea. We were walking on a kind of macadamized pavement made of dead coral (for on a reef such as ours the living coral is found only at the edges, save a few small pieces scattered here and there), covered with a mud of crushed coral and broken shells. Fishes dart before us as we go along. Every now and then there is a tremendous hubbub in front of our feet, and a great ray-fish, about the size of a teatree, flies from our presence. We tread on something hard, and stooping down pick up a mollusk, creeping along in the mud. Dirty it looks, covered with brown mud and crusted over with seaweeds. But a little careful cleaning will soon bring out its beauty, for it is not a thing to be despised.

This muddy pavement, however, has few charms for us; it is the edge we want to be at. So we hasten forward till the little coral bushes get thicker and closer together, and their colours grow brighter, and the muddy pavement is broken up into white patches, and the water is shallower, and the patches get smaller and smaller, and at last we stand hardly ankle-deep on a carpet of living creatures, bright with every hue but the sun;—a carpet only a few feet wide, and beyond is the edge. Standing on the edge we look down upon a steep wall, reaching towards a bottom that is beyond our ken, though in that clear blue sea we can see for forty feet or more. And such a wall! A battlement of living coral, bush upon bush, spreading, shooting, stretching in all fantastic forms and in all beautiful colours,—delicate shades of green, richness of browns, purest of blues, loveliest of pinks. And there hang from them soft festoons and waving banners of skeleton-less polyps, still more bright and glorious in hue, gently swaying with the current's flow, while in and out their fairy caves glide shining parrot fishes, clothed in green and gold, and round orb-fishes, banded like a rainbow. Can you wonder that we sat down in the water and greedily filled our eyes with the sight?

But alas! all these things were beyond our reach, and though we could admire, our object was to rob. So after a while we turned to the strip of living carpet beneath our feet. What was made up of? In the first place, there were a goodly number of sea-anemones of many sorts and sizes; some firm and leathery, others soft and pulpy; some as small as a pea, and others, magnificent glossy fellows, measuring nearly two feet across when open. There were a few sea-weeds, but not many, and those mostly of delicate kinds. The greater part of the space was taken up with living corals and soft-bodied polyps. What are polyps like? Very much like a group of anemones all grown together. If you look at a sea-anemone carefully, you will observe on the outside a number of arms or tentacles, which the animal can put out or draw in at pleasure; in the inside a little bag, with its bottom knocked out, which serves as a stomach, and a number of partitions stretching from the sides towards the centre, and so dividing the body into a number of little separate boxes, very much like the inside of a poppy head. These tentacles, this bag-like stomach, and these partitions, are the great characteristics of the class of animals to which the sea-anemones belong. All the soft-bodied polyps begin life as little creatures of this kind. After a while, however, there comes a little swelling on one side, which growing bigger, gets peculiar little dints and knobs on it; then becomes hollowed out, and has all the little knobs set round it like a crown. In due time the little knobs become arms, the hollow a stomach, and in fine the swelling gets changed into a new creature, growing out of the side of its mother, just as a branch is budded off from a trunk. Other swellings take place, other creatures grow out. These young ones again throw out in turn buds of their own, and so after the process has been carried on for some time we get a number of anemones all growing on to one common trunk as leaves and branches grow on to a tree. And as there is a great variety in the arrangement of the branches and leaves of a tree, so polyps differ not only in the form and appearance of the little creatures themselves, in the shape of the mouths, the number, size, colour, &c. of the tentacles and the polyps, and the corals were covered and pierced and crowded with them. The very sand too was full of the shells of tiny animals, the foraminifera, such as in bygone ages built the stones with which a little while ago were built the pyramids. As it was, we were quite content with what we could see, filling our jars, our pockets, our bags, and at last our hands; and sitting down on the dry heat at the other end of the reef, had our lunch. And after lunch, we went to it again, and when we could pick up no more, we waded about frightening fish, and shooting porpoises, and talking about everything under the waters and above the waters, and especially about the discomforts of living in vessels that float upon the waters, until the sun went down in a red glory beyond the distant hills, not far from the place where Pharaoh was drowned and all his hosts, and the signal from the ship told us that the skipper had ordered the jolly-boat back.

But besides the soft-bodied polyps there were corals. What are corals? Houses built by the coral insects? And what are the coral insects? Animals in all chief points except one exactly like polyps, and that one point is that they are hard-bodied and not soft-bodied. Imagine a sea-anemone to become petrified, its sides and partitions all changed into stone. Let the mouth, stomach, and tentacles however remain soft, and let there be a film of slimy flesh covering the stony parts, inside and out, like a very thin skin, you will

thus get some idea of a single coral. Imagine now the compound polyp to become petrified, all the flexible stems and branches becoming rigid and stony, with just a thin film all over as before, and the mouths with their stomach and tentacles of course left as flesh, and you have a compound coral. It is a common idea that the coral animal lives in a cell that it has built, and may be seen looking out of the top of it, very much like a chimney sweep rejoicing in his strength at the top of a chimney. The true image would be the head and arms of a sweep, but nothing more of him except his skin tightly stretched over a blocked up chimney. The bricks should be inside him, for the hard parts of the corals are certainly inside them.

The coral insect is a polyp, a kind of sea-anemone, and it builds not its house but its own stony skeleton. The coral that is seen in the museum or the cabinet, though now quite white (the red coral in a different kind of thing) was once clothed with a thin skin of coloured flesh and from its many star-like marks were once alternately thrust forth and drawn back little mouths, each of which owned a stomach and was proud of a crown of tentacles. Like their brethren the soft-bodied polyps, the corals are of many forms. Some are branched, either tenderly or delicately, or in a stout, rough, spreading way. Some are heaped up together in a solid lump like a piece of rock. Sometimes the trunk which bears the little mouths is the most striking part of the animal, as in the greater number of the branched species. Sometimes there are a great many tolerably large mouths and stomachs crowded together on a short trunk. In these cases the stony partitions round each stomach are the most marked features of the whole. Sometimes, as in the brain-stone corals, the soft parts grow so fast that the stony parts cannot keep up with them, and all the partitions run into each and produce an appearance like ranges of mountains, as they are drawn on our maps. Diversified in every way, they look beautiful enough in the blanched state in which we have them at home. How much more beautiful are they in their own native colours, seen through the blue water, or glistening in the sunshine on the reef!

When a soft-bodied polyp dies there is an end of it; but the coral polyp leaves its bones behind, and new corals grow over and extend the dead remains of their ancestors. Growing century after century in the silent seas, one individual coming and another going, each drawing lime from the salt water, and by vital processes fastening it in its flesh; itself perishing, but leaving its work behind, generation after generation taking up and carrying on the task; these little creatures are able to manufacture rocks, to make whole islands, to add great pieces to continents, to do things that always have been and always will be a marvel to man. And yet all that they have done has been done within narrow limits. They cannot exist in such profusion as to form reefs, except in warm latitudes, within about thirty degrees north and south of the equator. They cease, for the most part, to live too at a depth below fifty fathoms, and a few hours' exposure out of water is enough to kill them. How is it, then, that their remains have been found on the top of high mountains, and brought up from the depths of the sea? Geologists tell us that the only way to explain this matter is to suppose (and the idea is supported by many other facts), that the tops of mountains were once below the sea, and the deep parts of the sea were once either dry land or just beneath the surface of the water. Mr. Darwin, in his book on Coral Reefs, explains how a belt of living coral, stretching round a piece of land, and reaching from just below low water to about fifty fathoms deep, will keep pace with the rising or sinking land, building a crust of coral, which in the one case is continually growing downwards, in the other, upwards.

A coral reef is always a home for many other creatures besides those which have been mentioned, and my friend and I commenced our search for them, treading as we went, not without compunction, on the carpet of polyps. Shell-fish were there in abundance; some dirty-looking and covered with weeds and other encrustations, others like the cowrie, as bright and clean as when seen on the mantel-piece. The shell-less mollusks were not wanting. One kind especially attracted us. Fancy a slug rather bigger than a man's hand, with a belly of a pure white, and a back of resplendent vermilion, and at one end a crown of white feathers tinted and edged with red. Would you admit such a slug to be a beauty? Of divers kinds of small crabs we took little notice, but we carried off all the star-fishes we could find, especially those whose arms were so much branched that the creature looked like a knot of the Gorgon's locks. Hiding underneath pieces of coral we found sea-urchins, and made much of one of a deep maroon colour, with spines as thick as your little finger. Every now and then we heard behind us a noise as if some one had suddenly stepped into the water, and turning round, saw that some great clam-shell had suddenly shut its jaws, and then sprung up into the air a jet of water two feet high. In the little sandy hollows between the bushes of coral, hugh cucumbers lolled about, busy as usual in their wonderful task of eating sand. Little fishes darted about hither and thither, and as the current ebbed and flowed over the reef, tender transparent jelly fishes floated and flapped about, some so delicate that we first became aware of their presence by seeing their shadow cast on the bottom where it was white and sandy. All these things were visible to the unassisted eye, but the water seemed besides with microscopic creatures, and the weeds and the polyps, and the corals were covered and pierced and crowded with them. The very sand too was full of the shells of tiny animals, the foraminifera, such as in bygone ages built the stones with which a little while ago were built the pyramids. As it was, we were quite content with what we could see, filling our jars, our pockets, our bags, and at last our hands; and sitting down on the dry heat at the other end of the reef, had our lunch. And after lunch, we went to it again, and when we could pick up no more, we waded about frightening fish, and shooting porpoises, and talking about everything under the waters and above the waters, and especially about the discomforts of living in vessels that float upon the waters; until the sun went down in a red glory beyond the distant hills, not far from the place where Pharaoh was drowned and all his hosts, and the signal from the ship told us that the skipper had ordered the jolly-boat back.

WHERE THE FAULT LIES.—"Great brother," said the moon to the sun, "why is it that, while you never hide your face from me, our poor sister the earth so often pines in dimness and obscurity?" "Little Sister," replied the sun, "the fault is not in me. You always behold me as I am, and rejoice in my light, but she too often covers herself with thick clouds, which even I cannot effectively pierce, and while she mourns my absence ought to know that I am ever near, and wait only for her clouds to pass that I may reveal myself."

## FRIENDS AND FOES AT MAKETU.

(From the *Daily Southern Cross*, May 14.)

The following notes, by our Special Correspondent, were prepared for publication some time ago, but have been unavoidably held over owing to the pressure of more exciting details.

In a former communication from Maketu I proposed to describe the positions occupied by the contending forces at that place at the time of my visit, and when doing so I may as well briefly describe the general features of the country between Maketu and Tauranga. Leaving Tauranga, there is a straight line of about sixteen miles, terminating in a spit which extends to the North Head of Maketu. The Waikato River, which is the boundary of the Waikato, is wide, but owing to the bar and the sunken rocks inside, only a very limited channel is open for navigation, even at flood tides. Vessels of the lightest draught, sailed by men well acquainted with the coast, can venture on the passage with safety. A high bluff, projecting for a long way seawards, rises close by the mouth of the Maketu River on the south, and the high land extends to the north, forming a sort of a neck of the Waikato River, where it terminates in a steep cliff. The land between Tauranga and Maketu, lying between the wooded range and the sea-line, is undulating, but towards Maketu it becomes marshy, from the accumulated drainage of the high land at the back, the outlets of which have shifted of late years (the old drainage being still open), and the Waikato River, which is the drainage of most of the two harbours, but the fast, as it never Maketu, is marshy, from the cause already mentioned. Generally, however, the soil about Maketu is less productive than that about Tauranga.

The friendly natives at Maketu live in a large fortified town, on the sea face of the bluff already mentioned, and overlooking the Waikato, and the Waikato River, which is the drainage of most of the two harbours, but the fast, as it never Maketu, is marshy, from the cause already mentioned. Generally, however, the soil about Maketu is less productive than that about Tauranga.

The King natives are:—

1. The Ngatiwas, belonging to Whakatane and Awatutu rivers, supposed to be 170 fighting men.

2. The Whakatuna, belonging to Opihi principally, supposed to number about 300 men.

3. The Ngai ai, residing further south on the coast at Tauranga, and estimated at fifty men.

4. The Ngatirangihi, living at the north end of Tauranga Lake, of whom about fifty are at Maketu.

5. The Ngatipikian, partly with the enemy, and belonging to Maketu and Rotorua. About forty men, and an unknown number of women and children, are on our side.

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